JUL 1 6 1998 SEQUENCE LISTING

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- (i) APPLICANT: TUYRLOVA, IRENA Wolfe, STEPHEN D.
- (ii) TITLE OF INVENTION: INHIBITOR OF STEM CELL PROLIFERATION AND USES THEREOF
- (iii) NUMBER OF SEQUENCES: 33
- (iv) CORRECTONDENCE ADDRESS:
 - ·A) ADERESURE: MIKON & VANDERHYE P.C.
 - B) .TFEET: 110 MORTE GLEBE ROAD
 - +C) CHTY: ARLINGTON
 - (D) STATE: VIRGINIA
 - (E) COUNTRY: U.S.A.
 - (F) DIF: 20001-4714
- (v) COMPUTER REALABLE FORM:
 - (A) MEDIUM TYPE: Floppy disk
 - (B) COMPUTER: IPM FC compatible
 - OC OPERATING SYSTEM: PC-DOS/MS-DOS
 - (D) GOFTWARE: Put/htln Release #1.0, Version #1.30
- (vi) CURRENT APPLICATION DATA:
 - AR APPLICATION NUMBER: US 08/832,443
 - B: FILING LATE: H-AFR-1997
 - FOR CLASSIFICATION:
- (viii) ATTORNEY, AGENT INFORMATION:
 - (A) NAME: FYRNE, THOMAS E.
 - B- REGISTRATION NUMBER: 32,205
 - (C) REPERENCE/DOCKET NUMBER: 1831-222
 - (ix) TELECOMMUNICATION INFORMATION:
 - (A: TELEPHONE: (703) 816-4000 B: TELEFAX: (703) 816-410
 - MERMATINER \mathbf{F} , in \mathbf{M} :i:
 - GEQUENCE CHAPA MERIUMINU:
 - (A LENGTH: 1H amine abids
 - P TYPE: arine acid
 - CO STRANCELNESS:
 - TOPOLOGY: Liber

3 3

II M LETTE TYPE: popular

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INFORMATION FOR SEQ ID NO:2: (1) SEQUENCE CHARACTERISTICS: (\hat{A}) LENGTH: 15 amino acids (P) TYPE: amino acid (C) STRANDEDNESS: (D) TOPOLOGY: linear [HE] MOLECULE TYPE: peptide (x1) SEQUENCE DESCRIPTION: JEQ ID NO:2: Cys Phe Pro His Ehe Asp Leu Ser His Gly Por Ala Gln Val Cys 1 $^{\circ}$ 5 $^{\circ}$ 10 $^{\circ}$ 15 (2) INFORMATION FOR SEQ ID NO:3: (i) SEQUENCE CHAFACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (C) STRANDEDNESS: (D) TOPOLOGY: linear (ii) MOLECULE TYPE: peptide (xi) SEQUENCE DESCRIPTION: SEQ ID NO:3: Asp Ala Leu Thr Asn Ala Val Ala His Val Asp Asp Met Pro Asn Ala 10

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Leu Ser Ala

.E, TEN TE THASA TIESTOTI MI A TEN THE IT among a tils E TYPE: amin a sid .T STRANDEINESS:

(F) TOPOLOGY: linear

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THE BOOK OF STREET

- i SEQUENCE CHARACTERISTICS:
 [A] LENGTH: 9 amino acids
 [B] TYPE: amino acid
 [C] STRANDEDNESS:
 [D] TOFOLOGY: linear
- :i, MOLECULE TYPE: peptide
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

 Leu Val Val Tyr Pro Trp Thr Gln Arg
 1 5
- (2) INFORMATION FOR SEQ ID NO:6:
 - (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 8 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS:
 - (D) TOPOLOGY: linear
 - (ii) MOLECULE TYPE: peptide
 - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:
 - Leu Val Val Tyr Fro Trp Thr Gln .
- (2) INFORMATION FOR SEQ ID NO:7:
 - (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 7 amino acids
 (B) TYPE: amino acids

TERMINENTED:

.. M. LE THE IMPE popular

- will degree to be been been been been as degree in months
- del Val Val Tyr Er dig Thr

%[] ToPoLOGY: linear THE MOLECULE TYPE: peptide WI SEQUENCE DESCRIPTION: SEQ ID NO:5: Les Val Val Tyr Pro Trp -:: INFORMATION FOR SEQ ID NO:9: 1 SEQUENCE CHAPACTERISTICS: (A) LENGTH: 5 amino acids (B) TYPE: amino acid (C) STRANDEDNESS: (D) TOPOLOGY: linear (ii) MOLECULE TYPE: peptide (x1) SEQUENCE DESCRIPTION: SEQ ID NO:9: Leu Val Val Tyr Fro 1) INFORMATION FOR SEQ ID NO:10: (i) SEQUENCE CHAFACTERISTICS: (A) LENGTH: 7 amino acids (B) TYPE: amino acid (C) STRANDEENESS: (D) TOFOLOGY: linear THE MOLEGIES TYPE: poptide

HE OFFICE OFFICE OF OR, IN MICH.

Val Val Tyr Pro Trp Thr Gln

INF EMETINE FOR JE NO : 11:

COMPONENCE MEASURES INTO NO.

[wi] PEQUENCE DESCRIPTION: SEQ ID NO:11: Tyr Fra Trp Thr Glr. Arg Phe INFORMATION FOR SEQ ID NO:12: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 6 amino acids (E) TYPE: amino acid (C) STRANDEDNESS: (D) TOPOLOGY: linear Hill MOLECULE TYPE: peptide (xi) SEQUENCE DESCRIPTION: SEQ ID NO:12: Tyr Pro Trp Thr Gln Arg (2) INFORMATION FOR SEQ ID NO:13: (1) SEQUENCE CHAFACTERISTICS: (A) LENGTH: 5 amino acids (B) TYPE: amino acid (C) STRANDEDNESS: (D) TOPOLOGY: linear (ii) MOLECULE TYPE: peptide wit depretate description: dep in No.13: dyr Er - Try Thr - Alm TOP EMETICAL BYE JEY IN 19:14: E; DEQUENCE CHARACTERISTICS: A' LENGTH: 6 amino abids B' TYPE: amino abid CTRANDEDNESS: C TO CONTROL

ing the legither by the

. * + .	INFORMATION FOR SEQ ID NO:15:	
	<pre>[ii] SEQUENCE CHARACTERISTICS: (A) LENGTH: 423 base pairs (B) TYPE: nucleic acid (I) STRANDEDNESS: single (D) TOPOLOGY: linear</pre>	
	(11, MOLECULE TYPE: DNA (genomic)	

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

GTGCTGTCTC	CTGCCGACAA	GACCAACGTC	AAGGCCGCCT	GGJGTAAGGT	CGGCGCGCAC	6.0
GOTGGCGAGT	ATGGTGCGGA	GGCCCTGGAG	AGGATGTTCC	TGTCCTTCCC	CACCACCAAG	11.0
ACCTACTICC	CGCACTTCGA	CCTGAGCCAC	GGCTCTGCCC	AGGTTAAGGG	CCACGGCAAG	150
AAGGTGGCCG	ACGCGCTGAC	CAACGCCGTG	GCGCACGTGG	ACGACATGCC	CAACGCGCTG	240
TCCGCCCTGA	GCGACCTGCA	CGCGCA CAAG	CTTCGGGTGG	ACCCGGTCAA	CTTCAAGCTC	300
CTAAGCCACT	GCCTGCTGGT	GACCCT 3GCC	GCCCACCTCC	CCGCCGAGTT	CACCCCTGCG	360
GTGCACGCCT	CCCTGGACAA	GTTCCTGGCT	TCTGTGAGCA	CCGTGCTGAC	CTCCAAATAC	420
CCT						423

(2) INFORMATION FOR SEQ ID NO:16:

- [H] SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 141 amino acids
 - (B) TYPE: amino acid
 or STRANDEDNESS:
 I THE LOOKE HISTORY
- I MIRMUR TYPE: 4-4-12-

RE SEQUENCE DEACRIFTION: SEQ ID NO:10:

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inr	Ala	Lea	Ser	Asp 85	Leu	His	Ala	His	Lys 90	lea	Arg	Val	Asp	Fr. 95	Vidi	
Asn	The	Lys	Leu 100	Leu	Ser	His	Суз	Lou 105	Leu	Val	Thr	Leu	Ala 110	Ala	His	
Leu	Pro	Ala 115	Glu	Phe	Thr	Pro	Ala 120	Vai	His	Ala	Ser	Leu 125	Asp	Lys	Ehr	
Leu	Ala 130	Ser	Val	Ser	Thr	Val 135	Leu	Thr	Ser	l.;;s	Tyr 140	Arg				
l) INFOR	RMAT	ION I	FOR S	EQ I	ID NO	D: 17:	:									
(1)	(A (B) (C)	LEN TYE STE	E CHA NGTH: PE: r RANDE POLOG	438 nucle DNES	B bas eic a SS: s	se pa acid singl	airs									
(xi)									:17:							
OTGCACCTO	SA C	ICCTO	GAGGA	s GAA	\GTC'I	rgcc	GTTA	ACTG(CCC '	rvigo	:GGC <i>F</i>	₹A G(GTGA	ACGT(3	60
CATGAAGT	rg Gr	IGGTO	GAGGC	CCI	rgggd	CAGG	CTGC	TGGT	rgg :	ITTAC	CTTT	IG GA	ACCC	AGAGC	3	120
TTCTTTGAC	ST CO	CTTTC	GGGGA	TCI	rgtco	CACT	CCTC	GATGO	CTG '	PTATO	GGCA	VA CC	CCTAA	AGGTC	3	180
MGGCTCAT	TG GO	DANGA	AAAGI	GCI	rcggi	rgcc	TTT	AGTGA	ATG (3 170	GCTC	CA CC	CTGGA	ACAAC		2.4)
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11. 12.12	· / .	:	·: ::	1 75	** :::				: •	: : •	17.7	·/. ·		1 7,47		٠.
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. To IMPOR	WAT:	ion i	FOR J	EQ I	D NO	::1-:	;									
			0 1997 1 9799 :					:								

MET SEQUENCE DESCRIPTION: SEQ ID No:18:

Wal His Lea Thr Fro Glu Glu Lys Ser Ala Val Thr Ala 1990 Trp Gly

Lys Val Ash Val Asp Glu Val Gly Gly Glu A.a Leu Gly Arg Leu Leu

Val Val Tyr Pro Trp Thr Gln Arg Phe Phe Glu Ser Phe Gly Asp Leu

Nor Thr Fro Asp Ala Val Met Gly Ash Pro Lys Val Lys Ala His Gly

Lys Lys Val Leu Gly Ala Phe Ser Asp Gly Leu Ala His Leu Asp Asn

Leu Lys Gly Thr Phe Ala Thr Leu Ser Glu Leu His Cys Asp Lys Leu

His Val Asp Pro Glu Asn Phe Arg Leu Leu Gly Asn Val Leu Val Cys 105

Vai Leu Ala His His Phe Gly Lys Glu Phe Thr Pro Pro Val Gln Ala

Ala Tyr Gin Lys Val Val Ala Gly Val Ala Ash Ala Leu Ala His Lys 130 135 140

Tyr His 145

AT INFORMATION FOR SEQ ID NO:19:

i) sequence characteristics:

- (A) LENGTH: 141 amine acids
- (B) TYPE: amino acid
 (C) OTRANDEDNESS:
- li di anizawa libe wa
- THE THE THEFT AND THE

REGULARDE DESCRIPTION: JEQ ID NO:14:

Tal too Nee. My. His Asp. Lys Sor Ast. He lys Als Als Tip. Hy Tys

Ala Len Ala Ser Ala Ala Gly His Leu Asp Asp Leu Ero Gly Ala Len EL

Jer Ala Leu Ser Asp Leu His Ala His Lys Leu Arg Val Asp Erz Val 85 90 90

Ash Fhe Lys Leu Leu Ser His Cys Leu Leu Val Thi Leu Ala Ger His 100 105 110

His Pro Ala Asp Phe Thr Pro Ala Vai His Ala Ser Leu Asp Lys Phe 115 120 125

Leu Ala Ser Val Ser Thr Val Leu Thr Ser Lys Tyr Arg 130 135 140

(A) INFORMATION FOR SEQ ID NO:20:

- (!) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 146 amino acids
 - (B) TYPE: am.ino acid
 - (C) STRANDEDNESS:
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:
- Val His Leu Thr Asp Ala Glu Lys Ala Ala Val Ser Cys Leu Trp Gly
 1 5 10 15
- Lys Vai Asn Jer Asp Glu Val Gly Gly Glu Ala Leu Gly Arg Leu Leu 20 - 25 - 30
- Val Val Tyr Pro Trp Thr Gin Arg Tyr Phe Asp Ser Phe Gly Asp Leu $\frac{1}{4}^{\circ}$
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- Incolor Tale Its The Alas the Age App Stylled Ach Highles Ara Wes
- then Lye Bly The Fhe Ala Ser Len Ser Blu Len His tys Asy Lye Len so α
- His Val Apple 3. Am the Art Legiles by Am Met Lie Val Legile 1.

[..] INFORMATION FOR SEQ ID NO:21:

- (i) BEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 141 amino acids
 - (B) TYPE: amino acid
 - c) atrandedness:
 - [D] TOFOLOGY: linear
- n: MOLECULE TYPE: peptide

(mi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

- Val Leu Ser Ala Ala Asp Lys Ala Ash Val Lys Ala Ala Trp Gly Lys
- Val Gly Gly Gln Ala Gly Ala His Gly Ala Glu Ala Leu Glu Arg Met
- Phe Leu Gly Phe Pro Thr Thr Lys Thr Tyr Fne Pro His Phe Asn Leu
- Ser His Gly Ser Asp Gln Val Lys Ala His Gly Gln Lys Val Ala Asp
- Ala Leu Thr Lys Ala Val Gly His Leu Asp Asp Leu Pro Gly Ala Leu
- Jer Ala Leu Ser Asp Leu His Ala His Lys Leu Arg Val Asp Pro Val
- Ash Phe Lys Leu Leu Ser His Cys Leu Leu Val Thr Leu Ala Ala His
- His Iro Asp Asp Pho Ash Pro Sor Val His Ala Sor Lea Asp Lys Pho

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- URQUENCE CHARACTERISTICS: (A) LENGTH: 146 amine acids
 - P TYPE: amino arise to compare the compare to the c

Val His Leu Cer Ala Glu Glu Lys Glu Ala Val Leu Hly Leu Trp Gly

Lys Val Asn Val Asp Glu Val Gly Glu Ala Leu Gly Arg Leu Leu 25 3;

Val Val Tyr Fro Trp Thr Gln Arg Phe Fhe Flu Ser Fhe Gly Asp Leu 35 40 45

Ser Ash Ala Asp Ala Val Met Gly Ash Pro Lys Vai Lys Ala His Gly

Lys Lys Val Leu Gln Ser Phe Ser Asp Gly Leu Lys His Leu Asp Asn

Leu Lys Gly Thr Phe Ala Lys Leu Ser Glu Leu His Cys Asp Gln Leu

His Val Asp Pro Glu Asn Phe Arg Leu Leu Hy Asn Val Ile Val Val

Val Leu Ala Arg Arg Leu Gly His Asp Phe Asn Pro Asp Val Gln Ala

Ala Phe Gln Lys Val Val Ala Gly Val Ala Ash Ala Leu Ala His Lys

Tyr His 145

information for SEQ id No:23:

- (i) SEQUENCE CHARACTERISTICS:
 - (\tilde{A}) LENGTH: 23 amino acids (B) TYPE: amino acid (C) STRANDEDNESS:

 - (D) TOPOLOGY: linear
- it Matraur Tyre: peptide

RECOMPLIENCE CENTRALIES DE CAPE DE MESERS

Tal His Lea Ner Ala dia dia lys dia Ala Mai Lea diy Lea Try diy 1 10^{-10}

Iv. Val Am. Val Amy Vin Val

ii MOLECULE TYFE: peptide ME SEQUENCE DESCRIPTION: SEQ ID No:24: Val Leu Ger Ala Ala Asp Lys Ala Asp Val Lys Ala Ala Trp Gly Lys Val Gly Gly Gln ..., INFORMATION FOR SEQ ID NO:25: (1) SEQUENCE CHARACTERISTICS: (A) LENGTH: 14 amino acids (B) TYPE: amino acid (C) STRANDEDNESS: (D) TOPOLOGY: linear (ii) MOLECULE TYPE: peptide (xi) SEQUENCE DESCRIPTION: SEQ ID NO:25: The Pro His Phe Asn Leu Ser His Gly Ser Asp Gln Val Lys 10 ... INFORMATION FOR SEQ ID NO:26: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 10 amino acids (B) TYPE: amino acid (C) STRANDEDNESS: (D) TOPOLOGY: linear II II IEMIE TYPE paytia MINISTERNAL CERTIFICATIONS CENTRAL NO. 11. NO. 11. P. led Wall Wall Tyr Fr. Trp. Thr. Air Ara The ime erati m e e de, it m : ":

[MI] DEQUENCE DESCRIPTION: SEQ ID NO:27: Wall Wall Tyr Pro Trp Thr Gln Arg

(2) INFORMATION FOR SEQ ID NO:28:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 4 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS:
 - (D) TOPOLOGY: linear
- Hill MOLECULE TYPE: peptide
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

Tyr Pro Trp Thr

- A) INFORMATION FOR SEQ ID NO:29:
 - (i) SEQUENCE CHAFACTERISTICS:
 - (A) LENGTH: 4 amino acids (B) TYPE: amino acid

 - (C) STRANDEDNESS:
 - (D) TOPOLOGY: linear
 - (ii) MOLECULE TYPE: peptide
 - RESIDENCE LEGISLATIONS DES LA COMPLETA
- INF BMATION FOR CEG II NOTES:
 - E DEQUENCE CHARACTERISTICS:

 - A DEN MUHI A amin anib BO TMERI amin anii DO MURAMU BINEWAL

Gly Lys Fre Tyr

INFURMATION FOR SEQ ID NO:31:

- .!, SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 4 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS:
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:
- Gly Leu Pro Tyr
- (2) INFORMATION FOR SEQ ID NO:32:
 - (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 6 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS:
 - (D) TOPOLOGY: linear
 - (ii) MOLECULE TYPE: peptide
 - MIN SEQUENCE DESCRIPTION: SEQ ID NO:32:
 - Lys Met Trp Met Phe Arg
 - INFORMACION FOR FORE IN MOTOR
 - JE, JEN JE MARA JERIJI DE A LEN JER Harin artin E LYPE: amin arti JURANDRIMENS: HI TUROLOGY: linear
 - THE MILE TYPE: 1-971 190